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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,859	07/09/2003	Yasuo Inoue	29284/598	8149

7590 09/27/2004  
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EXAMINER

CHEN, ALAN S

ART UNIT	PAPER NUMBER
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2182

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/614,859

Applicant(s)

INOUE, YASUO

Examiner

Alan S Chen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers



- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_ 
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-14 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of application #: 10/614860, 10/614861, 10/614862, 10/614863, 10/614864. Although the conflicting claims are not identical, they are not patentably distinct from each other because applicant recites limitations that are based on the general premise of the instant application that each functional unit requires a minimum number of paths required to connect to associated functional units, e.g., the number of paths is equivalent to the number of associated functional units needed to be connected to.

### *Information Disclosure Statement*

3. The information disclosure statement filed 07/09/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent, each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

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U.S. Patent Documents have been considered, but Foreign Patent Documents and Other Documents have not.

***Claim Objections***

4. Claims 13 objected to because of the following informalities: the word "communication" in line 4 should be replaced with "communicate". Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 13 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 13 recites the limitation "said plurality of cache units" in lines 3 and 5. There is insufficient antecedent basis for this limitation in the claim. Examiner assumes these lines should read "said cache unit".

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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9. Claims 1-14 rejected under 35 U.S.C. 102(e) as being anticipated by No. 5,247,638 to O'Brien et al. (hereafter O'Brien).

10. As per claim 1, O'Brien discloses a storage system comprising: a channel unit (Fig. 1, element 110-0 and Fig. 2, element 201-0) that transfers data sent from an upper-level system (Fig. 1, element 11) and transfers data to said upper-level system (see abstract), a cache unit (Fig. 1, element 113) which is connected to said channel unit (Fig. 2, element 113 is connected to element 110) and in which data sent from said channel unit is stored (Column 7, lines 46-65); a plurality of control units (Fig. 1, element 111 and 112) that is connected to said cache unit (Fig. 1, element 113), and transfers or receives data to or from said cache unit (Fig. 2); a disk device in which data sent from said plurality of control units is stored (Fig. 1, element 102-1), and a plurality of paths (Fig. 1, paths between element 111, 112 and element 113), one of said paths (one path between each control unit 111, 112 and cache, 113) connecting each control unit to said cache unit), wherein a number of said paths linking said plurality of control units and said cache unit equals a number of said plurality of control units (Fig. 1, two paths, one for each control unit, each path a dedicated path to corresponding cache unit).

11. As per claim 2, O'Brien discloses claim 1, wherein said plurality of paths includes a first path (line between element 111 and 113) that links a first control unit (element 111) included in said plurality of control units (element 111 and 112) to said cache unit (element 113), and a second path (line between element 112 and 113) that links a second control unit (element 112) included in said plurality of control units to said cache unit (element 113).

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12. As per claim 3, O'Brien discloses claim 2, wherein said first path and said second path are independent of each other (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

13. As per claim 4, O'Brien discloses claim 2, wherein said first path is dedicated to communication between said first control unit and said cache unit (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

14. As per claim 5, O'Brien discloses claim 4, wherein said second path is dedicated to communication between said second control unit and said cache unit (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

15. As per claim 6, O'Brien discloses claim 1, wherein among said plurality of paths, a path linking said cache unit (Fig. 1, element 113) and a predetermined control unit included in said plurality of control units is not the same as a path linking said cache unit and an other control unit included in said plurality of control units (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

16. As per claims 7 and 9, O'Brien discloses claim 2, wherein said first path directly links said first control unit to said cache unit (Fig. 1, path between elements 111 and 113).

17. As per claims 8 and 10, O'Brien discloses claims 7 and 9, respectively, wherein said second path directly links said second control unit to said cache unit on a point-to-point basis, with no split/fan-out in the path (Fig. 1, path between elements 112 and 113).

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18. As per claim 11, O'Brien discloses claim 1, wherein said disk device includes a plurality of disk drives (Fig. 1, element 122-125), and said plurality of control units is connected to said plurality of disk drives (Fig. 1, element 121, plurality of control circuits).

19. As per claim 12, O'Brien discloses claim 1, wherein said plurality of paths are signal lines linking said cache unit and said plurality of control units (inherently paths carry electrical signals, paths are address, data and control lines as shown in Fig. 2).

20. As per claim 13, O'Brien discloses claim 1, wherein said plurality of paths are used to write data (Fig. 2), of which writing is requested by said upper-level system, from said cache unit to said disk device, and used to communication data, of which writing is requested by said upper-level system, from said cache unit to said plurality of control units (Column 9, lines 33-39).

21. As per claim 14, O'Brien discloses claim 1, wherein said plurality of paths are used to read data (Fig. 2), of which reading is requested by said upper-level system, from said disk device, and are used to communicate data, of which reading is requested by said upper-level system, from said control unit to said cache unit (Column 9, lines 33-39).

### ***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to data storage device that interface a host via cache, controllers:

U.S. Pat. No. 5,131,087 to Warr

U.S. Pat. No. 5,253,351 to Yamamoto et al.

U.S. Pat. No. 5,263,145 to Brady et al.

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U.S. Pat. No. 4,633,387 to Hartung et al.

U.S. Pat. No. 4,603,380 to Easton et al.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan S Chen whose telephone number is 571-272-4143. The examiner can normally be reached on M-F 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASC  
09/14/2004



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